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ABSTRACT

Proceedings of a Pacific regional workshop to identify developments and problems in educational information services are presented in four chapters. In chapter 1, seminar objectives and participants are listed. Objectives were to review and exchange experiences on the existing information systems and services; to identify crucial issues related to educational information systems, services, and processing; and to consider the possible uses of computers for educational information processing. In chapter 2, syntheses of participant countries' experiences with regard to information services are presented for Australia, the People's Republic of China, India, Japan, Indonesia, Malaysia, New Zealand, the Philippines, Korea, Singapore, and Thailand. In chapter 3, problems in educational information system development and potential solutions are considered under six headings: coordination and management; information acquisition, processing, dissemination, and utilization; resources; language; quality; and computerization. In the final chapter, conclusions are offered and further workshops are recommended. Seven appendices contain a list of workshop participants and group members and descriptions of various regional education information services, including UNESCO, the International Bureau of Education, and the Network of Education. (LP)

ED244846

UNESCO-NIER REGIONAL PROGRAMME

EDUCATIONAL INFORMATION

Problems and Issues, and Strategies for Resolving Them

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

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Report of a Regional Workshop

1—23 February 1983

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Section for Educational Co-operation in Asia

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Chapter I

INTRODUCTION

Educational information and documentation services are basic for a sound educational system as well as for enhancing the intellectual capacity of human beings. At various meetings organized under the Asian Programme of Educational Innovation for Development (APEID), the importance of educational information and documentation services has been stressed repeatedly.

Considering such an awareness, the Regional Workshop on Educational Information was organized by the National Institute for Educational Research (NIER) of Japan from 1 to 23 February 1983 in collaboration with the Unesco Regional Office for Education in Asia and the Pacific, Bangkok, within the framework of APEID. The workshop addressed itself to the following objectives: i) to review and exchange experiences on the existing educational information systems and services as well as on the techniques and methods employed for information processing; ii) to identify crucial issues and problems in relation to the development of educational information systems and services, and educational information processing in particular; and iii) to consider the possible use of computers for educational information processing.

The workshop was attended by participants in their personal capacities, from Australia, People's Republic of China, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Republic of Korea, Singapore, Thailand and the SEAMEO Regional Centre for Educational in Science and Mathematics (RECSAM). Two representatives from the Unesco Regional Office in Bangkok, and one representative each from the International Bureau of Education (IBE) in Geneva and thw Network of Educational Innovation for Development in Africa (NEIDA) also attended the workshop. (For the list of participants see Annex I.)

The workshop was opened by Dr. Hiroshi Kida, Director General of NIER and the participants elected the following officers of the workshop.

Chairperson:	Mr. Lloyd D. Blazely (Australia)
Vice-chairpersons:	Dr. Sang Jo Kang (Republic of Korea) Ms. Low Sing Leng (Singapore)
Rapporteurs:	Mr. Loh Kok Wah (Malaysia) Ms. Corazon L. Galang (Philippines)

The workshop conducted its deliberations in plenary and group sessions, and during the workshop the participants were given an opportunity to visit several educational institutions concerned with educational information in Japan. (For the list of group memebers see Annex II.)

The draft of the final report was presented and adopted at the closing session on the last day of the workshop with modifications to be incorporated in the final report. This report does not necessarily represent any views of the governments of the participating countries in the workshop.

Chapter II

SYNTHESIS OF EXPERIENCES

Participants of the workshop prepared papers describing the information systems and services in their countries.

The following is an overview of the existing or prevailing practices on educational information systems and services in the region:

* The phenomenon of knowledge explosion has necessitated a systematic approach to organizing educational information that can serve the needs of educational planners, administrators, researchers, teachers and other interested individuals and agencies. This has brought about regional awareness of and appreciation for educational information systems and services which is reflected by the fact that every country has information centres on various aspects.

* Educational information encompasses both quantitative and qualitative aspects. Qualitative aspect of educational information includes curriculum materials, educational innovations, research findings, documents, etc. Both types of information exist in the region to varying degrees.

* The development of educational information systems and services varies from country to country. This may be due to, among others, differences in geographical size and features, culture, economic development, administration and systems of education.

* All countires in the region utilize computers in varying degrees. While most of the countries have used computers for processing quantitative data, some have used them for processing and storing both quantitative and qualitative data. However, more emphasis has been given to the handling of quantative data.

* It has been noted that some countries have employd the use of the mass media such as radio and television for educational information dissemination.

* In the light of knowledge explosion and various educational reforms, there is an increasing tendency for teachers in the region to look for educational information for classroom use. Therefore more attention should be given to the collection and compilation of educational information useful to classroom teachers.

* In most countries of the region, the services of educational information lie within government agencies. However, in some, both government agencies and autonomous bodies collect, process and disseminate educational information.

* Though countries in the region have a number of centres responsible for handling educational information and services, it appears that no country has established a highly centralized agency to manage and coordinate all aspects of educational informaiton dissemination and services.

* As educational reforms are being continuously implemented to improve the standard of education, there is not only a need to upgrade national educational information systems and services but also to establish networks to give access to educational information within and among countries in the region for the overall improvement of education.

* Although countries in the region have taken steps to improve and upgrade their educational information systems and services including the use of computer technology, there is much more to be done. Problems such as financial constraints, lack of administrative support, shortage of qualified and trained personnel, lack of coordination, inadequate facilities and the presence of language barriers need to be solved.

For a more comprehensive view of the prevailing educational information systems and services in the different countries in the region summaries of the country reports are presented in the following pages.

Australia

There are a considerable number of educational information systems in Australia. The characteristics of these systems and the services they provide vary greatly and hence this brief overview can only include some of the more important variations and trends. No attempt will be made to give detailed specifications of individual systems.

There have been at least five important trends in recent years.

1. There is an increasing use of computers for storing, processing and accessing information. Australia has a large computer capacity and the trend towards computer-based systems is likely to accelerate.

2. Partly because of recent moves to give individual schools more control over their own curriculum and partly because teachers are much more highly qualified than they were in the past, greater attention is now being given to make more information systems easily and readily available to teachers. New generation computer software which enables computer terminals to be 'user friendly' have assisted in this regard.

3. Recent attempts have been made to co-ordinate like systems from various states into a single significant national system and to concentrate a number of national systems into the same computer network.

4. The efforts at co-ordination have resulted in the very recent preparation of an Australian Education Thesaurus.

5. The current economic situation together with declining enrolments has resulted in a greater interest by educational administrators in quality educational information systems and services to underpin policy development.

The most comprehensive information system in Australia is undoubtedly the Australian Education Index (A.E.I.) which provides listings from most of the important journals, reserach reports and monographs in the country. Most other systems are much more content specific and are pepared with a particular audience in mind, for example, teachers of a

given subject such as mathematics, researchers, or educators interested in a specific topic such as multicultural education.

National systems are mostly generated and managed by an exisitng organization such as the Australian Education Council, the Australian Coucnil for Educational Research, a university faculty of education or in the case of statistical information systems, the Australian Bureau of Statistics. However in a few instances, such as the Technical and Further Education Clearing House, a new organization has been estalished to manage a system. The initiative in these cases is most likely to come from the Australian Education Council, which is the council of the Ministers for Education from the different states, or one of its committees. The new organization is almost certain to be attached to a state education department.

All states take responsibility for their own comprehensive statistical information system and pass on an agreed set of information from these to the Australian Bureau of Statistics. State systems also encourage sections or centres under their control, to develop and service information systems relevant to their particular interests.

Computers have been used in the operation of statistical systems for some time. However in 1979 the A.E.I. became the first major non-statistical computer-based educational information system. Several other national and local systems have now followed this lead and in some states experimentation has taken place with school level educational information systems. In almost all cases when a system can be searched by computer, hard copy is also produced and distributed.

In 1981, the Australian Education Council established a working party to develop ways to improve educational information systems in Australia. The first action of the working party was to commission the development of an Australian Education Thesaurus. It has also negotiated to have three new subfiles added to the A.E.I. and has set up a group to develop a computer-based national curriculum information network and service. This latter group has virtually completed its work and a system should be in operation by the end of this year.

People's Republic of China

A brief account of educational service provided in the People's Republic of China will be given under two categories, namely, statistical information and non-statistical information

I. Statistical information

In the Ministry of Education (MOE) is a planning Department catering to the needs of planning, financial affairs, statistics, employment and salaries at all levels and for all types of schools. Basic educational statistics are collected annually from the following three channels:

1. Bureau of Education in other Ministries or Commissions under the State Council which are under obligation to provide the MOE with statistical materials about schools of various types under their jurisdiction. They are mainly higher education institutions and specialized secondary schools.

2. Bureau of Education or Higher Education in each province/municipality/autonomous region. Each of them has a statistics division which in its turn has to collect educational statistics either from local educational authorities of the lower echelon or directly from higher educational institutions under its spervision.

3. Higher educational institutions under the direct jurisdiction of the MOE.

Statistics of vocational schools are not collected by MOE but by the Ministry of Labour and Employment.

The MOE needs about 18 months to process the statistical data collected all over the country and to get it printed in book form. Up to now educational statistics mainly serve the needs of planning and financing. From now on they will also serve the needs of forecasting and mathematical simulation of the educational system.

It should be pointed out that the statistical data so laboriously collected and processed are not readily accessi-

ble to the public at large, including the educational community. This is a weak link in the existing system for the dissemination and utilization of statistical information.

However, with the forthcoming publication of a comprehensive *Education Yearbook* containing a section of educational statistics, such data will be widely disseminated to the public.

The MOE, in its turn, must report its essential findings to the Central Bureau of Statistics which is a body under the State Council, exercising overall control of the collection and dissemination of statistical data to be carried out by each governmental agency.

The MOE will initiate a programme of computer application in the form of building up a MIS (Management Information System) in 1983, when a minicomputer is installed. Then the processing of educational statistics will rank high in this programme.

It might be mentioned by the way, that the most comprehensive census ever done in China was carried out in 1982. Its voluminous data are now being processed by computers installed in the Central Bureau of Statistics and in the computer centres of the provincial governments. Upon its completion the census will provide detailed information about the educational level of the whole population, the number of illiterates among the adults, vital information about various groups of teachers, etc.

II. Non-statistical information

Here the description of the situation will first of all be related to the documentation or bibliographical work done by research organizations and libraries. The library of the Central Institute for Educational Research (CIER) plays a pivotal role. The bibliographical materials edited by this library and published by CIER include, among other things, the following:

a) New Accessions Bulletins;

b) Guide to Educational Papers in Chinese Periodicals (Quarterly); and

c) Educational Abstracts (irregular series)

All the more significant articles published in nearly 400 domestic educational journals are covered by the Guide mentioned in item b). Aided by this Guide, users can easily find the relevant articles recently published, with full information on title, author and source of each article.

Besides CIER quite a number of other educational research organizations of provincial status or affiliated with universities and colleges also edit and publish their own bibliographical materials, with rather limited circulation and catering to the needs of their clientele or specific research projects.

In addition to the bibliographical work mentioned above the following items are significant enough as sources of information:

1. The Ministry of Education publishes two journals as its official organs, namely *"People's Education"* and *"The Higher Education Front"*. A paper called "Education in China" is expected to appear twice or thrice a week in the latter half of this year.

The CIER publishes two journals, namely *"Educational Research"*, and *"Education in Foreign Countries"*.

Nearly all provincial educational authorities publish their own journals. A number of universities and colleges also publish journals and monographs. Subject area journals are also published in significant numbers and they are usually affiliated with the learned societies.

2. Proceedings or collected papers emanating from the convening of professional conferences, symposia and seminars have enormously expanded under the aegis of the Chinese Association of Education and its affiliated provincial branches and learned societies.

3. Reprints of educational articles published in domestic papers have been in existence for quite a long time and are published by the People's University Press.

4. Educational information on foreign countries is also provided by the Xinhua News Agency to subscribers, with sources drawn from the news release of foreign news agencies, articles excerpted from foreign newspapers and journals. These are all given in the original languages and have the advantage of promptness but their provision is limited to a few subscribers.

The Information and Documentation Unit of the MOE is mainly responsible for providing policy-oriented information to administrators and policy-makers.

A well-coordinated network of educational information services remains to be organized. Computers are not used as yet in the compilation of bibliographical materials or the storage and retrieval of educational publications.

India

Education is the basic input for human resource development. The educational development in India has been phased through five year plans which are the guiding principles in the overall development of the country. This multilingual country has twenty two states and nine union territory administrations. Though education is on the concurrent list there is flexibility in its introduction among the states and union territories in all aspects. However, at the national level the educational pattern followed is five years of primary I-V, three years of middle VI-VIII, two years of secondary IX and X, two years of higher secondary/ vocational and two/three years degree for an ordinary degree course. But for professional courses the duration varies.

The responsibility for collection, collation and dissemination of information is primarily that of the Ministry of Education and Culture. In this task it is supported by various agencies like University Grants Commission for higher education, Bureau of Technical Education in the Ministry of Education for technical education and other ministries like Ministry of Agriculture and Ministry of Labour in respect to agriculture and some vocational and occupational courses respectively. Coming to the statistical aspect, the information is first collected at the state level from the

schools in the prescribed schedules and manually processed at the state level by the statistical unit of the State Department of Education. In respect of higher education the information is collected directly by the University Grants Commission from the universities and colleges and compiled course-wise for each state separately, while passing on the information to the Ministry of Education and Culture to complete its documents. The University Grants Commission publishes its own statistics separately. The Ministry of Education publishes annually two reports, namely, *"Education in India"* and *"Education in States"* which contain statistics and write-ups. The Department of Adult Education collects information about Adult Education programmes, projects and statistics and brings out its own publication both quarterly and annually. The National Council of Educational Research and Training (NCERT), an autonomous body under the Ministry of Education and Culture, conducts the quinquennial All India Educational surveys as well as sample surveys in the areas of stagnation and dropout, educational backwardness, school buildings, laboratory facilities and brings out its own reports. Several other departments under NCERT also conduct researches on areas like teacher education, curriculum development, etc. The reports are circulated among the different types of consumers including teacher educators, researchers and teachers. Recently a High Level Committee on educational statistics had been set up to look into the method of collection of educational statistics regarding collection, collation and dissemination among various concerned agencies. This committee which submitted its report in September 1982 has made around 41 recommendations which are being examined before implementation. The Ministry of Education and Culture also publishes an abstract - *Indian Educational Abstract*.

Although there has been dissemination of information about research and developmental activities in education through various documents and abstracts from time to time, it is observed that in the arrangement there is much more to be desired as only a very limited quantum of research is abstracted and disseminated among a very limited clientele. This is essentially due to the fact that computer is not being used for documentation of educational information as it should have been. The universities document the research conducted in their universities and these are sent to U.G.C.

for circulation. Some institutions at the national level - Indian National Scientific Documentation Centre (INSDOC) and the Indian Council of Social Science Research (ICSSR) undertake documentation of researches and studies conducted in science and social science subjects. Again their reports are also not available to a wider circle.

At present the use of computers is mostly restricted to processing data relating to educational research programmes and examination results. Even the annual statistics collected by the Ministry of Education and Culture is not computerized but manually processed. This has resulted in non availability of data for storage and retrieval and develop time series data, which are needed in the facilities for microfiching which is not available in the country. This facility coupled with a National Information Systems Department which can cater to both statistical and non-statistical information relating to different disciplines in education, educational administration, educational planning equipped with personnel both academically and professionally in the modern information management system will go a long way in fulfilling the ever increasing demand in various areas of educational information.

INDONESIA

In the achievement of our national development objectives we recognize that education plays a critical role. A strong relationship exists between our education and social, economic, political and cultural development. It is natural, therefore, that the educational planners and administrators need information to formulate policies and fix priorities, and the educational researchers have valid and reliable data in order to assess and update educational programmes.

A national educational data system in Indonesia requires that a central body within the Department of Education and Culture be given responsibility and authority for coordinating all information handling. Such coordination will eliminate, at point of origin, data collection that is unnecessary, undersirable, infeasible, or redundant. This central body is the Office of Educational and Cultural

Research and Development (BP3K). Request for information, from within and outside the Department of Education and Culture, is channeled through this office.

Implementation of national education data system requires the establishment of an information network leading from the working record maintained at the lowest level of operation of our educational structures to the highest level and back. We have developed this kind of information network since 1970, and through this a considerable information system has been established for the Indonesian education system. The annual school statistics, special reports and analysis, and research investigation are available within the Indonesian education organization.

Our information system objective is making the right information available to those who need it, when they need it, in the desired format, at the least possible cost. To achieve this objective, the procedure for collecting, processing, and disseminating information must be coordinated and routinized.

A substantial portion of the information in our national system, e.g. school statistics, is routinized in the sense that it is collected and processed periodically. Some of the information, however, is changed from time to time to keep pace with changing needs. For this purpose, we do a continuing department-wide evaluation of information needs as part of our information system.

The need for timely information and the problem of late reporting are solved by designating a specific day in the third week after the beginning of school year, where school principals and administrators are required to complete the basic data system forms, so that the majority of information called for in our data system is recorded. This is done simultaneously in every school throughout Indonesia and sent to the BP3K, through a definite channel on time.

The problem of how to make the information available to become more incorporated into the decision making process at the top policy levels is being solved through the refinement of data collection procedures and modes of analysis, which allow more detailed comment on specific aspects of the Indonesian education system and facilitate the computation and

application of compound indicators in monitoring and evaluation of the Indonesian education system.

In addition to this development, the framework for a Data Bank has already established. The Data Bank contains research results, data analysis and statements concerning education in Indonesia from a wide variety of sources.

Further development in our educational information system is still needed for integration and synthesis of all information in a proper orientation. the ultimate result of this is regular and also special purpose reports prepared to advice all top level decision makers as to the kind of basis which currently exists for their policy decisions.

Concerning the computerization of data processing and information handling in our system, the BP3K has acquired a WANG System 2200 Computer as early as 1975. Further, in 1977 and 1978, we also acquire another two computers of the same system.

These computers have made several major contribution in the improvement of our educational information system. In the first place, the equipment can be used to do many of the various routine operations of management and control, and thus free some of our staff to participate in professional and research activities. Furthermore, the professional staff can now have access to the comprehensive data on all aspects of the educational programmes which are essential for the day-to-day decision making and long-range planning. Second, the computers can serve as calculating tool essential to handling mass data. The system's capability to correlate, compare, interrelate, and synthesize data is almost unlimited. Our administrators now have available to them the necessary facilities for taking the vast amount of educational data and correlating it with sociological and technological information to supply answers to a host of questions facing Indonesian education today. Third, the computers can be used to improve research instruments for making the multiple measurements which are now analyzable. Many important tools in educational research pose no particular problem in computer computation. Fourth, the computers can contribute to the acoomplishment of improving the adequacy of education data being used in research, i.e. the accuracy, timeliness, comparability and comprehensiveness of

the data. Last but not least, computers can be used to simulate an educational system that permits advanced educational planning and decision making. By simulating an educational system for national or a given region, i.e. province, district or sub-district, and inserting such information as socioeconomic data, population trends, and other pertinent data, our educational planners and administrators can now cycle the programme ahead and generate prediction about our future educational needs.

Japan

Educational information is considered to play a vital role in improving the overall educational situation in the country. There is a move to establish a national educational information centre so as to provide comprehensive national educational information and documentation services to a wider range of users, but so far this still remains as a plan.

Statistical information like the number of schools, students and teachers is essential for formulating educational policies and long-term educational planning. The Ministry of Education, Science and Culture as the government agency responsible for the administration, promotion and development of education in the country conducts surveys annually to gather necessary data for policy-making and planning.

In conducting surveys, the Ministry of Education distributes forms to each school and educational institution using such local administrative bodies and structure as prefectural boards of education and municipal boards of education, and the completed form is subsequently collected again through such infrastructure. The data obtained are processed and analyzed by the Ministry and as a rule, made public.

As for non-statistical information, various institutions and organizations are involved in the collection, processing and dissemination of such information. However, each of these such as university, research institute and public library, has its own policy, objective or specialization, and its service is generally limited only to certain

category of users.

An example of this is the Science Information Processing Centre at the University of Tsukuba, and one of its functions is to provide computerized educational information retrieval services to the professional staff, researchers and students within the university as it has ERIC and other data bases. There is a need to co-ordinate such individual efforts to expand the scope of each system and service and establish a network among them, so that comprehensive educational information services could be provided to all concerned. The idea of the establishment of a national educational information centre can be regarded as a step towards the realization of such educational information system and services in the country.

Malaysia

The Malaysian national education policy was based on the recommendations of the Education Committee formed in 1956. The task of this committee was to review the entire system of education in order to establish a national system of education acceptable to the various races of the country.

The Malaysian education system is centralized and is made up of four hierarchical levels i.e. natinoal, state, divisional or district and school. Decision-making at the national level is vested in four Standing Committees responsible for laying general policy guidelines. The Committees are:

a) Educational Planning Committe (EPC) - the highest decision-making body concerned with general policy matters

b) Central Curriculum Committee - responsible for determining and formulating overall policies on curriculum.

c) Finance Committee - responsible for examining all budget estimates and monitoring of expenditure.

d) Development Committee - responsible for formulating

strategies and for implementing programmes and projects for the overall physical development.

The Ministry recognizes the importance of the information component in the decision-making process which includes the formulation of educational policies, planning of references, establishing educational priorities and their implementation and improving exisitng educational system and practice. The Educational Planning and Research Division (EPRD) has been charged with the responsibility of collecting, processing, analyzing, storing and disseminating information for use by the various Divisions within the Ministry and others like the Economic Planning Unit of the Prime Minister's Department, research students from local and foreign universities and international agencies such as Unesco. For this the Data Bank Unit (DBU) was established.

For the present the DBU has only collected information of a quantitative nature. Plans are being made to collect qualitative information such as decisions of the EPC, working papers and reports for reference by planners, administrators and policy makers.

There are two main channels by which statistics on education are collected by the DBU. In the first instance, each school submits its statistics to the respective State Education Department (SED). The statistics are aggregated by the SED and are then transmitted to the DBU. In the second instance, statistics are transmitted direct by schools to the DBU.

Each school is identified through a simple coding system consisting of three alphabets and four numerals in a seven digit code. This code shows the location of the school according to its state, district, level of education provided and language medium.

Statistics from institutions of higher learning are obtained directly from the institutions concerned.

The information received at the DBU is processed and stored in two categories, namely: state-based and school-based. State-based data are processed manually while shool-based data are computerized due to the volume.

The DBU is presently developing the Data Base Management System (DBMS) which, in the Malaysian context, refers to a computerized system of managing data where heterogenous records can be integrated into a single organized structure called Data Base.

School-based data which are computerized are inputed into the computer and stored in magnetic tapes or discs. By using the software that has already been developed, editing and updating can be carried out. When the tapes are free of errors they are merged into one master tape for the whole country. Such data stored in master tapes are ready for use.

Besides the EPRD, other Divisions too use the computer to process data collected for their specific needs. These Divisions include the Examinations Syndicate, Higher Education Division, Curriculum Development Centre, Teacher Training Division and Scholarship and Training Division.

The DBU has been faced with a number of problems and steps have been taken to minimize them. However, there are a number of areas which need to be closely looked into:

a. Authenticity of the information given. The DBU has no definite means of determining authenticity other than by relying on the integrity and responsibility of the data source.

b. Accuracy of information: Inacuurate data supplied is always possible because schools are often burdened with many requests for information. By confining basic data collection to the DBU much of the burden has been eliminated. In addition questionnaires and forms have been simplified.

c. Speed: Supplying information by target dates is important. Simplifying questionnaires and forms have speeded up the return of information. In addition, officers of the DBU try, wherever possible, to keep in close contact with schools to establish better rapport.

d. Up-dating certain types of data: Certain types of data like teacher's personal records have to be up-dated annually. Computer print-outs are sent to individual teachers each year. The teacher concerned will have to return

the print-out with changes noted on it. Reminders are sent to those who are slow in returning the print-outs.

e. Personnel: Problems are encountered at the receiving and processing ends due to the shortage of trained and experienced personnel. A number of officers are undergoing training at various institutions.

f. Computer time: Demand for computer time is heavy as the computer is also being used to process examination results. This problems is being looked into.

New Zealand

In New Zealand the main responsibility for collecting statistical information on education rests with the Department of Education (the national government department), through its statistics division. In addition, other governmental, quasi-governmental and independent bodies, e.g. Department of Statistics, University Grants Committee and New Zealand Council for Educational Research, collect statistical information for their own purposes. The resulting data may or may not be published or made available.

The Department of Education publishes, annually, *Education Statistics for New Zealand,* containing, for example, statistics on schools, students, teachers and expenditure on education. Some of these statistics are also printed in the Department of Education's annual report and in the *New Zealand Official Yearbook.* In addition, bodies such as the University Grants Committee publish statistics, again annually, on the destination of students graduating from New Zealand Universities, and other statistics are produced at varying intervals by other agencies. In addition to the provision of statistical information, services also exist for the dissemination of educational information to professionals and students in education.

Three special libraries, namely, the Department of Education, the New Zealand Council for Educational Research and the New Zealand Educational Institute (the primary teachers' professional association) in Wellington, service researchers, professionals and students in the educational field. In

addition to these specialized libraries, institutions (e.g. public, teachers' college and university libraries and the National Library of New Zealand) also assist in information for education.

The libraries of the Department of Education and the New Zealand Educational Institute basically service their own staff, while the New Zealand Council for Educational Research has a legislative instrument requiring it to "provide information, advice and assistance to persons and organizations requiring it". To this end the Council employs, in addition to library staff, information officers to assist users in the location of information. The Council also produces, twice yearly, a looseleaf folder SET, containing accounts which interpret recent research in education with the practical implications of the research for teachers. Begun in 1974 by the Council, SET has since 1980 been published jointly with the Australian Council for Educational Research.

All three libraries use the ERIC Thesaurus for subject headings. The Department of Education and the New Zealand Educational Institute also use ERIC subject headings for indexing of journal articles and other information for information retrieval as required. In the Institute's case these are modified and augmented to take account of the New Zealand situation.

Computerization of educational information is still in its infancy in New Zealand. It is only in the last six months that a comprehensive bibliographic database (the Washington Library Network, renamed New Zealand Bibliographic Network or NZBN) has been set up in New Zealand. Computerization of educational information systems has been deferred until the NZBN has been networked, expected to begin later this year.

Several problems face educational information systems and services in New Zealand. There is no central collection point for the collection of information on education in New Zealand (as in Australia), and therefore no specialized index of New Zealand education. Whatever information is collected, is done so selectively, according to the scope of the institution concerned. There is futhermore, Some overlap and duplication of effort between different parts of the

system in terms of educational information collected.

Philippines

The Ministry of Education, Culture and Sports (MECS) uses a two-way communication system which aims at reaching every user. It is a mechanism for managing the implementation and feedback on the policies, programmes and projects of the Ministry to and from its various users with a view to continually inform and improve the Ministry's delivery of service.

The educational information system and service is a component of every major office within the Ministry and educational institutions both public and private.

The Bureau of Elementary Education of MECS with its rescurces and outlets carries out the bulk of storing, documenting and disseminating much if not all of its activities, programmes and projects. The Information and Publication Service, organized in 1975 is able to implement the public relations programme of the Ministry using soft-ware and existing hard-ware. The Planning Service carries out the Educational Management Information System (EMIS). The public library system and the school library system (public and private) carry out through their services the bulk of storing qualitative and quantitative materials. The National Research and Development Center takes charge of the publication and documentation services for educational innovations.

Learning resource centers and data banks were established in the thirteen regions. The Bureau of Elementary Education's Learning Resource Center loans films, slide-tapes, other visual aids, research studies, and other printed materials particularly on elementary education, to educational institutions and other interested parties.

The various dissemination tools/approaches used to inform the various users include printed materials, such as the *Letter to the Teacher,* a bimonthly personalized letter addressed to the elementary teachers to keep them informed on crucial issues and development in elementary education;

the MECS Journal; the *School News Review* and documents (orders, memoranda, letters, circulars and reports).

The Ministry also relies on mass media for information dissemination. It links with the government radio/TV network for its developmental information programmes in order to reach the grassroots.

Fairs, exhibits and displays are other ways by which the Ministry informs the public/users of the new trends in education. To appraise the people in the community and get their reactions on educational policies and reforms, schools conduct community assemblies. Additionally, conventions, conferences, seminars and workshops convened by educational and civic organizations focus attention on educational reforms and trends.

Effectiveness of planning greatly depends on the data and information collection and transfer. Data must be collected and information must be generated to serve as baseline facts in judging the cost and benefits of education. To achieve this, an Educational Management Information System (EMIS) in all the levels in the Ministry's organizational hierarchy, from the national down to the institutional levels was established. EMIS in the Ministry's context is the full range of processess, methods and techniques, through which educational data are collected, permuted and dispersed. The system helps education administrators and managers promote the delivery of educational services. It is an important factor in the improvement and production of data and information needed for decision-making.

The EMIS network comprises built-in sub-systems in areas that are based on the functions and/or responsibilities of the regional/division/district offices. These subsystems which cut across all levels of management are:

a) Pupil/student management information system

b) Personnel management information system

c) Curriculum management information system

d) Legislation and control management information system

e) Physical facilities management information system

f) Financial management information system

g) Community extension services management information system

h) Educational, planning research and evaluation management information system

At present, the Ministry's efforts at computerization are limited to testing, measurement and evaluation, research and statistics. These activities are largely undertaken by the Ministry's National Education Testing Center. The Bureau of Elementary Education has employed computers in its researches, and so has the Planning Service for its education management information system. The four-year elementary education development programme known as the Programme for Decentralized Educational Development (PRODED) will also use the computer in processing data derived from the sub-projects being monitored.

The emerging deamnds of the educational system for accurate, relevant data and reliable information have catelyzed the need to strengthen the Ministry's EMIS both at the national and sub-national levels. Compuerlization will certainly be answer to this need.

The present problems in educational information systems and services are:

a) Cost constraints

b) It is difficult to generalize the data 'needed' for regional educational planning, because of the wide variations in different regions in the degree of development, and the shifting emphasis from one aspect of education to another, as development progresses. The data needed for an advanced region may be different from a developing or underdeveloped area.

c) Lack of trained personnel and space for the computers.

d) The geographic features of the country make it difficult to communicate with the different regions

Republic of Korea

Educational information systems and services in Korea are operated at the institutional level rather than at the national level. Research institutes attached to the University and Provincial Boards of Education have their own information systems. However, the systems are limited to a few specified information sources and users.

Since its inauguration in 1972, the Korean Educational Development Institute (KEDI) has been serving as an information centre for educational innovation, in addition to research and development work. This significant effort created the Educational Resources and Information Centre with a different concept from the traditional library, in order to mobilize suitable educational information systematically at a moderate time for organizations and individuals that may contribute to the development and progress of educational research.

Although the administrative structure is maintained by educational administrative authorities of the Ministry of Education, which collect and provide educational statistics and administrative order, the school in the remote area had been out of the reach of the network for information on educational innovation. This problem forced KEDI to formulate the systematic information network with each level of educational institute, provincial Boards of Education, and users in collecting and disseminating information efficiently.

KEDI is now operating this function with the largest number and variety of new educational materials which lead to qualitative improvement of school programme and research activities, with over the 20 staffs of documentation specialists, information researchers, and computer specialists, and with the moderate financial support.

Educational Resources and Information Centre of KEDI is divided into information management and operation, information research, research on computerization, and printing.

Informaion management and operation include the collection, arrangement, preservation, and dissemination of various materials related to education from domestic and foreign information sources. There are contracts for material exchange with 138 domestic and foreign institutes including Korean Scientific Technology and Korea Development Institute.

Development of Thesaurus for the computerization of educational research materials, analysis of the trend of educational research, the summary of research, and the abstracts of masters and doctoral theses in all the domestic universities are prepared. For the distribution of information materials and support activity to facilitate the use of these materials, the content page is copied and offered to relevant research teams as soon as a professional journal is obtained.

Report on the content of foreign and domestic professional journals; comprehensive list of the journals on educational research; list of books which KEDI held; index and abstracts of specific subjects such as educational methodology, educational psychology, educational sociology, educational philosopy, learning and instruction, etc. are distributed to research institutes, universities, libraries, Provincial Boards of Education, and interested users.

In order to introduce the various tasks of KEDI to others and to inform field teachers of research results, *"Korean Education"*, an academic journal and *"Educational Development"*, an organizational journal as well as Annual Report in both English and Korean are published and distributed.

In addition, publication of field education report and index for field teachers; membership training for the efficient management and operation of information; ERIC microfiche copy service for users; and development of input materials for the computerization of research data are continuously made.

Singapore

As the term "educational information" covers too wide

an area, it was confined for the purpose of this Workshop, to the information relating to:

- Educational journals, periodicals, research studies, projects reports, and survey findings;

- Statistical data banks pertaining to students, teachers and schools; and

- Development of curriculum materials, reforms and innovations in education.

As such, the following paragraphs give a brief outline of how the Singapore Ministry of Education collects, processes and disseminates educational information and whether computers are used for the establishment of information systems and provision of services.

The libraries in the Ministry of Education (MOE) headquarters and the Institute of Education (IE) have a worldwide collection of the educational journals, periodicals, research materials and other education related information. Both libraries circulate extracts of the newly acquired publications on monthly basis to the headquarters officers in the MOE and all schools. These libraries are opened to all education practitioners and administrators. They are closely associated with the National Library which caters to the general public and all libraries in technical institutions and the National University of Singapore. The national libraries are in the process of computerization and there are plans to set up a communication network to link the libraries in MOE, IE and the National University.

The Ministry also carries out researches and surveys to monitor and evaluate educational systems and special programmes. The findings from these projects are used by the top management for decision making, planning or reviewing of educational programmes. This type of educational information is also disseminated to school teachers via public media (e.g. TV, Radio and Newspaper). Computers are used for processing the surveys and analyzing the research projects.

Since 1980, the Ministry has set up a computerized data based management information system which comprises the students, teachers and schools data banks. The main objective

is to provide prompt and accurate information for decision making, planning and control. The information collected enables the Ministry to monitor for example the attrition rates of pupils at every level in the education system; calculate and project the manpower demand for and supply of teachers, and analyze and monitor the profile and performance of schools. Data on teachers together with data on pupils would enable the decision maker to decide how to allocate resources; the kind of training courses that should be conducted for teachers in service and new trainees; and how the number and development of teachers in schools should be adjusted to meet expected enrolment changes.

The computerized information system is also used to compile education statistical bulletins on pupils, teachers and schools on a yearly basis. These bulletins are widely circulated to officers in MOE as well as schools. The Ministry also provides statistical information on education to international organizations like Unesco.

As regard to educational information related to the development of curriculum materials, the Ministry has begun to set up resource centres which co-ordinate and compile all curriculum materials, including teaching aids and innovations in teaching methodologies. They provide facilities and opportunity for teachers to exchange ideas and share experiences.

In general, the Ministry realized the importance of well established educational information systems as well as effective dissemination of such information to both the policy planners, administrators and teachers in schools. A school council meeting among the top level management in headquarters and selected school principals are held monthly to discuss and disseminate educational policy, research findings, teaching methodologies and innovations in schools. Other principals and teachers are encouraged to view the live telecast on a closed circuit TV in some studios. They may also participate in the discussion through "*teleconference*" methods. Proceedings of such meetings are also video taped and disseminated to schools for viewing. In this way, the Ministry hopes to promote 2-way communication so that we can all work towards a better education system for the nation.

In the development of a centralized educational information system, the Ministry requires full co-operation and co-ordination from all information sources. These sources of educational information come from schools, different divisions in MOE headquarters, and other educational institutes. While computerization can be introduced to facilitate part of the processing stage, very much still depends on manual handling which tends to be labour intensive. Ensuring data accuracy and updatedness is always a headache. Data timeliness also needs good co-ordination and strong support from all levels. The Ministry is aware of the need for top-down information requirement analysis and data standardization/definition. Attempts have been made to improve data quality by means of a systematic occurrence reporting procedure, central data control authority and effective 2-way communication channels. User education on computer appreciation is also emphasized to ensure that all involved are fuily aware of the data problems, limitation of computer and the importance of users' participation and commitment in the development/implementation of the educational information systems. A strong support from the top management to pave the way for more efficient implementation of the educational information systems and services is deemed necessary.

Human resource constraint is also an area of concern. There is a shortage of well trained personnel in various disciplines (e.g. librarians, information/resource officers, data-processing professionals, research anlaysts and survey officers) for the development of a sound and effective educational information system. Much training effort has therefore been invested to overcome this problem.

Thailand

The ministries and offices concerned with education have their own information systems and services.

The National Education Commission, Office of the Prime Minister is responsible for the overall planning of education administered under separate government agencies. The major role of educational data and information for planning and administrative purposes is to provide an overall picture of the state and performance of the educational system. A

central function of the information system developed was the creation of data base and the translation of complex data into comprehensible information to serve in policy-making, planning and routine processes of educational administration.

The Ministry of Education is responsible for the management of the education in the country onthe following levels, pre-primary, primary, secondary, post-secondary, teacher education, technical and vocational education and non-formal education. The fourteen departments under the Ministry of Education are either totally or partially assigned to operate or control certain types of schools, colleges, or institutions. The educational planning office in each department collects necessary data and information according to its specialized field in order to submit these to the central planning office, Office of the Permanent Secretary, for educational planners in determining educational needs, the allocation of the budget, the expansion of schools and institutions and other related programmes.

The Ministry of Interior which is responsible for the management of primary schools in the municipality of every province and Bangkok Metropolitan area has its own information and documentation system.

The Office of University Affairs is responsible for the administration and management of higher education in government universities and private colleges. The Planning Division, Office of the Permanent secretary co-ordinates and co-operates with the Planning Division in various universities, institutes and private colleges within its jurisdiction in data collection for educational planning in higher education.

Educational statistical reports, profiles, indicators, educational researches are published and disseminated periodically by the department concerned.

As for the educational services, the national library which has the largest collection of educational information is under the Ministry of Education, schools, colleges and universities have their own libraries for the use of students, teachers, researchers and educators. Their services are also extended to other interested parties through read-

ing service, interlibrary loan service, exchanges of information and documents. Besides the Ministry of Education has set up a "Newspaper Reading Centre" in every village and a "Mobile Library" for the out-of-school youth and adult. Each municipality operates its own public library. The Ministry of Education through the assistance of Unesco has recently set up a Library and International Documentation Centre to serve as a clearinghouse for publications of organizations or agencies whose activities are related to international education, international understanding and international cooperation and to promote international exchange in the form of information and documentation services.

Radio and television have been utilized to disseminate educational information to the schools, universities and out-of-school youths.

Present problems and issues in the development of educational information and documentation services in Thailand are as follows:

a) Lack of co-ordination among various government agencies in dealing with educational information.

b) Inaccurate educational statistical reports.

c) Lack of support from administrators and high-level decision makers.

d) Shortage of well-qualified staff to manage information dissemination.

e) Insufficient facilities and equipment.

f) Financial constraints.

g) Limited access to information owing to language problem.

Computers have been utilized in collecting data for educational planning and researches since 1966. The National Statistical Bureau as a governmental office offers computer service to all government agencies. However, the Ministry of Education is now in the process of setting up its computerized information centre for educational infor-

mation services for the whole country.

The national library, some university libraries and documentation centres in Thailand have started using computers for the processing of reports, research works, books, serials and compiling bibliographies of educational materials. It is expected that the computerized system of educational information will be widely used with the support of the government and the general public.

Chapter III

Problems and Issues

Much progress has been achieved in educational information systems and services in the region, but problems remain unsolved. The degree or extent of the existing problems in the region varies from country to country.

The workshop decided to present the problems and suggested solutions and strategies in a matrix form for a conciseness and for ease of reference. The problems were considered under six headings.

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
1. Co-ordination/ Management			
1.1 Lack of co-ordination among various government agencies and educational institutions resulting in unnecessary duplication of efforts, incomplete coverage, lack of standardization, problems of inconsistency, incompatibility and accessibility of educational information.	- Authorize an existing agency/institution to be the co-ordinating body. This body should inquire into issues like standardization, coverage and accessibility of educational information, and recommend ways to minimize inconsistency, duplication and incompatibility.	X	
	- Form a co-ordinating committee to provide	X	

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	broad policy guidelines, plan implementation strategies, improve communication and resolve conflicts among various agencies and institutions handling educational information.		
	- Organize a central body to undertake the responsibility of coordinating among various government agencies and educational institutions.		X
	- Provide training for personnel in all aspects of educational information, e.g. librarians, data processing professionals, statisticians and information officers.	X	X
	- Promote regional and international exchange of expertise, experiences and technical know-how.	X	X
	- Organize programmes and conduct seminars, symposia and workshops to inform people concerned of the importance of educational information	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	systems and services and of the facilities and services available.		
	- Improve the existing educational information systems and services through computerization.	X	X
1.2 Inadequate attention to setting up of an integrated national network(s) for educational information.	- Promote awareness among the top management of the importance of setting up an integrated national network(s) for educational information. Perhaps one way could be to convey the idea upwards through the existing communication channels.	X	
	- Recommend to the top management to give priority to and allocate bigger proportion of the budget for setting up of an integrated national network(s).	X	
	- Review the existing information networks and plan for a better integrated national information system.	X	
	- Exchange ideas with	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	other countries which have already set up or are setting up such educational information networks.		
	- Conduct regular appraisals and review of established national information networks to improve and enhance educational information systems and services.	X	X
1.3 Lack of legislation to enable information systems to operate efficiently and effectively.	- Conduct research on the sufficiency of existing educational information legislation.	X	X
	- Inform top management on the effects of existing legislation on educational information systems and services and on the needs for additional measures.	X	X
2. Information Acquisition/Processing/Dissemination/Utilization			
2.1 Lack of systematic planning in the acquisition and dissemination of educational documents	- Conduct surveys to help determine user needs.	X	
	- Conduct seminars to	X	

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	promote awareness of the importance of educational documents and data.		
	- Set up evaluation systems to monitor information acquisition and dissemination.	X	
	- Form committees to select and screen educational documents to be acquired.	X	
	- Conduct research on educational trends in order to assist with the formulation of acquisition policies and preparation of plans for future needs.		X
2.2 Inadequate processing of educational literature (abstracts, reviews, etc.) to meet the needs of different groups of users.	- Process literature to conform with the needs of users such as administrators, decision makers, teachers, parents and others.	X	
	- Use computers in processing educational literature whenever possible.		X
	- Standardize format and terminology used in educational information system.		X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
2.3 Difficulty in keeping distribution lists up to date and complete.	- Prepare distribution lists for different categories of users and up-date them regularly.	X	
	- Develop criteria to classify information for the needs of the different groups of users.	X	
	- Improve the operation of distribution lists by mechanization.		X
2.4 Lack of awareness of existing educational information sources.	- Conduct orientation seminars and short courses on sources of educational information for the different groups of users.	X	
	- Prepare guides and brochures on available educational information materials for the different groups of users.	X	
	- Include awareness courses on educational information in the teacher training curriculum.		X
	- Prepare directories of available educational information services for users.		X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
2.5 Inferior audio and visual quality in the presentation of materials.	- Utilize effectively the expertise of support services of graphic artists and audio technicians.	X	X
	- Present relevant educational information materials in a simple but precise manner.	X	X
3. Resources			
3.1 Shortage of funds for establishing and operating sound educational information systems and services.	- Utilize the existing facilities, equipment and personnel more effectively and efficiently.	X	
	- Inform top management of the importance of educational information systems and services and appeal for more funds.	X	X
	- Prioritize activities to maximize the efficient and effective use of limited funds.	X	X
	- Seek assistance from regional and international organizations/ agencies for the setting up of educational information systems and services.	X	X
	- Establish linkages		X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	with institutions/organizations/agencies which have set up a well-organized educational information systems and services.		
3.2 Lack of qualified personnel.	- Provide appropriate training for educational information personnel.	X	X
	- Utilize expertise of personnel from other agencies within and outside the country.	X	X
	- Provide personnel exchange progrmmes on regional and international levels.	X	X
	- Upgrade the status of educational information personnel.		X
	- Introduce and/or develop information science as a discipline at an appropriate level of the education system.		X
3.3 Lack of appropriate physical facilities and suitable materials, e.g. space, equipment, computer hardware and software.	- Utilize existing facilities effectively.	X	
	- Identify, select and adapt appropriate technology in space utilization, computerization, etc.	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
4. Language			
4.1 In accessibility of educational information written in other languages owing to the lack of translated materials.	- Identify local personnel who are bilingual/multilingual and competent in specific subject areas.	X	
	- Train local subject area specialists to be competent in other languages.	X	X
	- Compile directories of competent translators.	X	X
	- Provide attractive remuneration/incentives for translators.	X	X
	- Identify, locate and acquire relevant translated documents.	X	X
	- Prepare abstracts of good and relevant documents written in other languages.	X	X
	- Develop and produce multilingual, international terminology, thesaurus, glossary, dictionary, etc.	X	X
	- Avoid use of ambiguous terms and language.	X	X
	- Prepare translated materials according	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	to the literacy levels of users.		
	- Prepare inexpensive educational information materials translated from other languages.	X	X
5. Quality			
5.1 Lack of comprehensive educational information systems and services in different levels of education, geographical areas and sectors of national activity.	- Provide adequate personnel and material resources, if not already available, at all collection points especially when a complete geographical coverage is needed.	X	X
	- Identify a key person or agency with local knowledge in the area with which a particular information system is concerned and request that person or agency to collect the data for the system.	X	X
	- Establish a centralized agency or appropriate committee of authorize an existing agency to coordinate the development of educational information systems.	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	- Develop processes of negotiation and exchange between education authorities and the authorities responsible for other local or regional/national activities e.g. manpower planning, resource development, etc.	X	X
5.2 Non-availability of relevant educational information when needed for decision making, planning, etc. and obsolescence of educational data for research and other purposes.	- Improve the flow of information distribution, collection, etc. by more realistic or stepwise planning of the process and by standardizing the routines and improving co-ordination.	X	
	- Introduce computerization and improve mechanization to reduce impact of human error, and to speed up the process by a more systematic procedure at collection points.		X
5.3 Inadequate, misrepresented or contaminated educational information is often misleading for users.	- Train sufficient personnel to be well versed in handling educational information especially in the preparation of data collection tools and interpretation of results.	X	

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	- Introduce computerization to improve and further enhance the short term solution.		X
5.4 Lack of standardization of educational and technical terms and bibliographical forms resulting in inconsistency within and between educational information systems.	- Provide operational definitions of terms acceptable to all to be used in collecting and processing educational information.	X	
	- Move towards the eventural adoption of international terms through use of international thesauri and accepted bibliographical style manuals.		X
5.5 Inappropriate procedures in collecting and processing data and in preparing data bases, produce invalid information.	- Introduce better training of personnel in good management and proper selection of information.	X	
	- Develop adequate meta-analysis techniques to improve the validity of information.		X
5.6 Insufficient attention to user needs in collecting educational data leads to inappropriate information.	- Develop and foster better communication between system managers and users.	X	
	- Inculcate awareness in system managers of the change of user needs from time to time.	X	

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	- Institute planning to ensure the development of systems to meet user needs through conducting detailed user needs surveys.		X
	- Develop flexible educational information systems to allow the inclusion of the types of information as it becomes available.		X
6. Computerization			
6.1 Negative attitudes towards use of computers in educational information systems by some operatives, users and contributors and too much expectation on computers to do more than what is possible.	- Provide necessary retraining for operatives.	X	
	- Give adequate education about computers through computer awareness / appreciation courses, seminars, etc. to all concerned before introducing computers.	X	X
	- Provide adequate information on planned usage of computer facilities before and during the introduction of computers.	X	X
6.2 Shortage of personnel with specialized skills when computers are introduced, especially in the	- Provide training courses for the personnel required and ensure sufficient people participate in	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
initial stage where demand exceeds supply	the training courses. - Provide encouragement and facilities for creative personnel in education to express and share their creativity and innovativeness to exploit the full range of the capabilities of the computer.		X
6.3 Difficulty in obtaining sufficient funds to purchase computer hardware.	- Consider carefully the options of purchase or leasing (renting) of computer equipment and choose the most economical solution.	X	X
	- Use available computer services and facilities to cut down cost.	X	X
	- Adopt an incremental phase approach in the implementation of computerization and purchase computer power as and when required at each phase.	X	X
	- Have a pool of computer resources and share these facilities, if applicable.	X	X
6.4 Difficulty in deciding on the cor-	- Provide training to personnel involved	X	X

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
rect choice of hardware and system configuration (centralized or distributed processing) owing to the rapid advancement of computer technology.	according to their specialization in all areas of computerization.		
	- Promote awareness and encourage personnel to keep abreast of the developments in computer technology.	X	X
	- Exchange of expertise and use of consultancy services.	X	X
6.5 Lack of awareness among users of the importance of active participation in the development of computer systems.	- Introduce user education programmes.	X	X
	- Provide tangible benefits and services to users.	X	X
	- Make the system friendly and easy to use from the user point of view.	X	X
	- Provide better inter-departmental co-ordination.	X	X
6.6 Non-availability of suitable software for specific needs.	- Survey exisiting resources on software and attempt to modify and adapt to one's needs.	X	X
	- Train programmers and system analysts to develop the necessary software for immediate needs.	X	

Statement of Problem	Suggested Solutions/ Strategies	Short Term	Long Term
	- Develop software package that are user friendly.		X
6.7 Difficulty of developing a computer system due to the processing being time consuming and expensive.	- Use available existing systems or software packages, if suitable.	X	

Chapter IV

SUMMARY AND CONCLUSIONS

Some countries in the region have used the computer in more areas of educational information systems and services than others. The existing disparties in the use of computer technology are due to, among other reasons, financial constraints and lack of qualified and trained personnel. While financial support is inadequate, some countries in the region have tapped the resources of a number of funding agencies/organizations within and outside the region.

It has been noted that in order to attract better qualified personnel to join the educational information service, better career incentives and prospects would have to be provided. Generally, countries in the region are aware of the importance of educational information. However, with more concrete support from top management/administration, this could be further enhanced.

There exists a dearth of educational information materials accessible to some groups of users within the region. Therefore, translated educational materials should be made available and much greater attention should be paid to the needs of all groups of users. It is also felt that there should be standardization of terminology within countries and within the region.

Educational information systems and services in the different countries of the region are handled by both government and autonomous bodies. It seems that these uncoordinated efforts have resulted in unnecessary duplication of activities, and wastage of funds and manpower. For more effective and efficient educational information systems and services within the countries of the region, better coordination at all levels of the system would have to be given due emphasis.

Since the educational informatin systems and services have become more complicated and the volume of literature has rapidly increased, it is felt that manual processing is becoming inadequate to meet requirements. Therefore, computerization should be introduced when and where appropriate to increase efficiency in information processing. While emphasis should be placed on computerization, we should not lose sight of its limitations because computerization is not a panacea. Human resource will always be important in the proper utilization of computer technology.

It is felt that the Workshop is just the first stage in the improvement of educational information systems and services in the countries of the region.

In this connection, a follow up on the developments in educational information systems and services in the countries of the region should be made.

It is, therefore, proposed that NIER and Unesco, Bangkok, further examine the problems and issues in educational information systems and services and take the necessary measures for better coordination in and access to educational information services in the region.

Annex I

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Mr. M. Kajita	Section for Educational Co-operation in Asia
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Annex II

LIST OF GROUP MEMBERS

Group 1:

Mr. Lloyd D. Blazely (Australia)

Mr. Hussin (Indonesia)

Mr. Johari bin Ahmat (Malaysia)

Ms. Charlotte Burton (New Zealand)

Mr. Tan Boon Tee (RECSAM)

Dr. Maria LaoSunthara (Unesco, Bangkok)

Dr. Hubert M. Dyasi (NEIDA)

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Mr. Koichiro Murase (Japan)

Mr. Loh Kok Wah (Malaysia)

Ms. Norma B. Bernardo (Philippines)

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Ms. Low Sin Leng (Singapore)

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Group 3:

Mr. Huang Shiqi (People's Republic of China)

Mr. K.N. Hiriyanniah (India)

Ms. Corazon L. Galang (Philippines)

Dr. Sang Jo Kang (Republic of Korea)

Mr. Ng Hok Siang (Singapore)

Ms. Pornnipha Limpaphayom (Thailand)

Ms. A. M. Furtado (IBE)

Annex III

The Educational Information Services of the Unesco Regional Office for Education in Asia and the Pacific, Bangkok

As one of its functions, the Unesco Regional Office for Education in Asia and the Pacific provides clearing house services to the Member States in the Asia and Pacific region. Its area of service now comprises the following Member States: Afghanistan, Australia, Bangladesh, Bhutan, Burma, China, Democratic Kampuchea, Democratic People's Republic of Korea, India, Indonesia, Iran, Japan, Lao People's Democratic Republic, Malaysia, Maldives, Mongolia, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Singapore, Socialist Republic of Viet Nam, Sri Lanka, Thailand, Tonga, Turkey, the Union of Soviet Socialist Republics and Western Samoa. Its work with the Regional Offices of UNICEF extends also to countires and territories in the Pacific Ocean areas such as Fiji.

The clearing house services involve the collection of information relating to education in Asia and the Pacific and the promotion of exchange and diffusion of such information through publications and other means, in order to assist the Governments, institutions and educational workers both within and without the region to benefit from each other's experience. On request, the office provides advisory services and internship programmes to Member States in order to assist them in organizing their own clearing house services.

To give full support to the activities of the Asian Centre of Educational Innovation for Development (ACEID), which was set up within the Regional Office in January 1973, resource units are being gathered and developed for consultation in the clearing house and for use in workshops held in the region. These units consist of printed and audio-

visual materials. (Details of the APEID information services are given in Annex IV.)

In collaboration with the International Bureau of Education (Geneva), the Unesco Regional Office and ACEID convened a Regional Seminar on Documentation and Information Support for Educational Innovation, which was held in Bangkok from 15 to 21 February 1977. Following the Seminar and other meetings which called for strengthening of educational information systems, internship training is being offered to personnel handling documentation and information services.

ACQUISITIONS

Documents acquired become part of a library collection to serve the bibliographical and research requirements of the Regional Programme and to enable the Office to answer enquiries of Governments and research workers from the region or outside.

Library figures at present show a collection of nearly 80,000 documents. Some 80 per cent of library acquisitions are received either as contributions, or as exchange material, and in the main from Government offices, National Commissions and educational institutions of Member States. An Accessions list and the Periodicals of Asia and the Pacific: a selected list of titles received and their contents provide a listing of titles added to the library collection every six months.

Special mention may be made here of the efforts of the Regional Office to acquire multiple copies of outstanding national publications. These publications are then included in the List of publications available from the Office to Member States.

DIFFUSION

Information thought to be essential to professional people in the Member States is made known or available through the following programmes outlined below:

a) PUBLICATIONS: By means of the regular preparation of publications, mainly in English, the results of studies, surveys and other information are published and printed in the printing shop of the Regional Office, and distributed to organizations and individuals who work in the field of education. The publications may be grouped as follows:

1. Comparative: reports of surveys and studies; education policy reports; monographs on aspects of education; reviews of documents; case studies.

2. Technical and methodological: Asian simulation in education model; statistical reviews; statistical studies; curriculum guides; correspondence education materials; source books; science worksheets; educational building reports; educational building digests; educational building information packages.

3. Trianing Course Materials: educational planning and management, population education, teacher training, etc.

4. Recommendations: reports of conferences, meetings, seminars.

5. Information: directories, information brochures, newsletters, posters, reproduction or reprints, bibliographies; accession lists, and other bibliographical compilations; ACEID newsletter; population education newsletter.

6. Operational: prospectuses, announcements.

In about 21 years of operation, the Regional Office has published more than 1,000 major titles (including separate-language versions) and more than 9,000 other documents.

Centain publications of the Office are established for periodical issuing and serve to diffuse information widely at regular intervals. In this category, mention may be made particularly of the Bulletin of the Unesco Regional Office for Education in Asia and the Pacific. It was started in 1966 and published twice a year in September and March until 1973, when it became an annual publication appearing in June. Each issue is devoted to one particular theme in

order to make information on that theme available within and without the region. By June 1982, 25 issues of the Bulletin had been published on such aspects of education in the Asia and Pacific region as: the problems of educational wastage; educational research; organization of educational planning and management; general secondary school curriculum; science education; reform and reorganization in education; rural education; adult education and literacy, new approaches and methods in education; higher education, education at the first level, school building, open education, technical and vocational education, population education and environmental education. Each issue contains a detailed bibliography on the topic, covering publications of Member States in the region. In 1972, the Bulletin was issued with two numbers of the Supplement, which was replaced in 1973 by a new serial currently called Education in Asia and the Pacific: reviews, reports and notes and now published each September. This publication includes reports of recent developments in the Member States (which may not yet be documented), reviews of publications and notes on Asian documents on education.

An Index to Asian educational periodicals 1960 to 1970 was compiled and published in 1974. Supplements are prepapred to bring the Index up-to-date. Periodicals of Asia and the Pacific: a selected list of titles received and their contents issued twice a year alerts readers to periodical articles appearing in educational periodicals published in the region.

For information of research workers in Thailand, and for providing libraries in the region and outside with library contacts in Thailand, the Office has published a directory of libraries in Thailand, revised periodically and currently listing about 90 such services in Thailand. The directory also lists publications available on an exchange basis.

b) EDUCATIONAL PLANNING AND MANAGEMENT SERVICE (EPMS): Information on educational policies in Asia and the Pacific is contained in abstracted form in the annual publication, Education in Asia: reviews, reports and notes. More extensive national reports on national educational policies and decision-making processes are contained in the reports of technical expert meetings on this subject (e.g. "Goals and

theories of education in Asia" ROEAP, 1980).

Information in the fields of educational management and planning is provided through seven books of correspondence course materials, which are regularly revised and updated. These materials are supplemented with more advanced readings and lesson-units; a training handbook in this area is also forthcoming.

A newly started series of Occasional papers in educational planning and management includes technical papers and annotated bibliographies relevant to educational developments in the region. The series has a limited distribution. Statistical information is collected on a continuing basis and collated periodically into comparative tables for the countries of the region. Reviews of progress of education in the Asia and Pacific region is prepared and published.

The first such review with statistical data was published in September 1966 as the first issue of the Bulletin. The second review, which was published under the title Progress of education in the Asian region: a statistical review, has a Statistical supplement which was published in 1972 and 1975. The Statistical review is being revised and will be published in the future to cover the period 1965-1980.

Statistical information is also regularly incorporated in other comparative technical and informational publications, including the Bulletin.

c) INFORMATION ON EDUCATIONAL FACILITIES: Information services offered by the Educational Facilities Development Service, which is an integral part of the Regional Office, consists of three principal publication series:

Educational building reports, being detailed publications on specific topics relating to the design and construction of all types of educational facilities.

Educational building digests, which are short technical publications of a more general nature.

Reprint Series - reprints of published material of special interest to Asia.

Occasional papers in educational facilities, short, technical reports of a highly specialized nature and therefore printed in a limited number for restricted distribution.

In addition to the above series, technical reports on specific projects are occasionally produced for limited distribution.

d) DISTRIBUTION OF PUBLICATIONS: The Regional Office has a total mailing list of over 2,500 addresses, mainly of organizations and academic institutions which can be served by subject interest. In a given year, some 41,000 copies of publications and other documents are distributed, with each address being served at least 20 times during the year (1982 statistics).

e) COMPILATION OF BIBLIOGRAPHICAL REFERENCES: Documents existing or published especially in the Member States are made known through bibliographies, indexes, directories, abstracts, lists of publications, and accession lists.

f) OTHER SERVICES: Information is also provided through:

1. Replies to enquiries for information or documents;
2. Missions to Member States in the region;
3. Reproduction of documents, upon request;
4. Displays and exhibitions;
5. Lectures;
6. Advisery services and guides to educational documentation, internship training and provision of library and documentation work experiences to library science students; and

7. 'Cataloguing in publication' (CIP) is done for all publications of the Regional Office.

POPULATION EDUCATION CLEARING HOUSE

Within the population education programme service in the Clearing House service for population education. This service is concerned with the acquisition, analysis, transformation and dissemination of materials relating to all aspects of population education, and particularly of materials valuable for use in educational projects being carried out or to be implemented in schools and out-of-schools in Asia and the Pacific region. The main objective of the Clearing House is to place these materials, by means of bibliographies, indexes, abstracts, newsletters, reviews and actual curriculum and training materials at the disposal of national authorities, educators, and all those engaged in population education projects.

To date, the service has produced and disseminated abstract-bibliographies, a periodic newsletter, reprint series, audio-visual material, photocopies, transformed materials and documentation publications to about 2,000 selected addresses. Some indication of the volume of diffusion of these documents is given by the fact that, between 1 January and December 1982 approximately 15,000 copies of publications and other documents were distributed. The latest addition to these services is a Selective Dissemination of Information (SDI) Service where population education materials are analyzed, processed and disseminated to particular audiences who have very high interest and use of these materials.

Since 1977, four internship programmes in materials and information services in population education have been undertaken to stimulate the setting up of national information networks in support of population education programmes. The main focus of the internship is to develop expertise in the analysis, processing, retrieval and dissemination of population education materials at the national level, for both in-school and out-of-school programmes. The Clearing House has also assisted several countries such as Bangladesh, China, India, Indonesia, Malaysia, Nepal and Thailand build up their population education collection.

Annex IV

The Asian Programme of Educational Innovation for Development (APEID)

APEID is a regional co-operative programme in education, established in 1973 at the recommendation of the Third Regional Conference of Ministers of Education and those Responsible for Economic Planning in Asia, and by authorization of the General Conference of Unesco at its 17th session in 1972.

The primary goal of APEID is to contribute to the building of national capabilities for undertaking educational innovations linked to the problems of national development, thereby improving the quality of life of the people in the Member States.

The distinctive feature of APEID is that it is jointly designed, executed, supervised and evaluated by the member countries themselves. The major principles of action are the sharing of experiences through co-operative endeavours among the Member States based on reciprocity, mutual learning and self-reliance.

As of January 1983, there are 22 countries participating in APEID: Afghanistan, Australia, Bangladesh, China, India, Indonesia, Iran, Japan, Lao People's Democratic Republic, Malaysia, Maldives, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Singapore, Socialist Republic of Viet Nam, Sri Lanka, Thailand, and Turkey.

Each country has set up a National Development Group (NDG) to identify and support educational innovations for development within the country and facilitate exchange between countries.

The member countries have offered leading institututions as Associated Centres of APEID. As of January 1983, there are 114 Associated Centres.

ACEID - the Asian Centre of Educational Innovation for Development - is an integral part of the Unesco Regional Office for Education in Asia and the Pacific, located in Bangkok. It functions as an interdisciplinary task force with the special function of facilitating inter-country co-operative action, serving as a catalytic agent for stimulating innovations in the countries, identifying gaps and growth points in national efforts, and developing information materials and promoting the exchange of educational media resources.

The Regional Consultation Meetings bring together the Chairmen of the National Development Group (NDGs) or senior administrators and selected heads of the Associated Centres to review and evaluate APEID's performance, establish new activities and set priorities, and provide guidelines for future action. The Regional Consultation Meetings were held annually from 1974 to 1979. They are now held once in two years, alternating with the Advisory Committee on Regional Co-operation in Education in Asia and the Pacific.

For the third programming cycle of APEID, which covers the years 1982-1986, the Seventh Regional Consultation Meeting (Bangkok, 1981) recommended the following programme areas for APEID to focus on:

1. Universalization of education at the primary level;
2. Promotion of scientific and technological competence and creativity;
3. Education and work;
4. Education and rural development;
5. Education and urban development;
6. Educational technology;
7. Professional support services and training of educational personnel;

8. Co-operative studies, reflections and research.

An important aspect of APEID is the development and encouragement of active networks of information to facilitate the sharing of experiences and resources relating to innovative projects/programmes among and within each member country. In fact, ACEID was primarily conceived as a resource base. It has been developing and strengthening the flow of information in order to bring to the notice of the member countries the availability of various types of resources, i.e. experiences, personnel, information and materials.

The information generated under APEID is problem-oriented, user specific, and produced by practitioners of educational innovations.

ACEID has been collecting and disseminating information on varous aspects of education (e.g., curriculum development, non-formal education, science education, teacher education, educational technology, vocational and technical education) through the following categories of publications:

a) Reports of meetings, seminars, workshops, project visits;

b) Case studies, either published as separate studies, or as portfolios of short studies;

c) Inventories of educational innovations;

d) Handbooks;

e) Modular instructional materials and instruction sheets;

f) Occasional papers prepared by scholars in Asia and the Pacific, on special topics of common interest in the region;

g) ACEID Newsletter;

h) Information materials such as Directory of APEID Associated centres, list of publications, annotated bibliographies.

At the country level, APEID encourages and supports the translation of APEID publications into the national languages, and translation of information of innovative projects and programmes which are likely to be of interest to a wider audience.

It is hoped that through the exchange of information and experiences within the APEID framework, policy makers and practitioners of innovations will learn about alternative approaches to solving similar problems which are facing many countries in this region.

As for APEID's future directions, the Programme would countinue to aim at enhancing national capabilities for undertaking co-ordinated sets of changes in the education system in order to realize national development goals. Furthermore, APEID would remain in constant evoluation in order to ensure responsiveness to the emerging development concerns in the participating countries of the Asia and Pacific region.

Annex V

Educational Information Processing and Services - RECSAM's Role

The late sixties witnessed the awareness and concern of many developing countries of the urgency to overhaul or improve their own educational systems. This was sparked off mainly by the eruption of activities in curriculum development and reform in the United States and United Kingdom in the immediate post Sputnik era. Sensing that indigenous curriculum innovations were necessary to fulfill local cultural and socio-economic conditions, curriculum development centres and science centres were established in many of these countries to spearhead indigenous reform. Regional Centre for Education in Sciece and Mathematics (RECSAM) was conceived under Southeast Asian Ministers of Education Organization (SEAMEO) to undertake activities and programmes that would strengthen and support national institutions in the areas of teaching and learning of science and mathematics.

The beehive of activities in various national educational development centres, universities, higher institutions of educational studies, and regional centres all contribute to the explosive production of educational materials and information. Coupled with this, many research and evaluation findings in education are being published in numerous journals and periodicals throughout the world. With this unprecedented explosion of information and knowledge in education, it is of paramount importance that some kind of procuring, processing, storing, retrieval, access, and dissemination system of educational information has to be formulated.

There are clear indications that traditional methods for handling the stupendous volume of information involved are not adequate. Not only are the volumes of information

increasing at an alarming rate, they are accompanied by an equally frigthening rise in the degree of specialization. The libraries, information service centres, and resource centres are there to satisfy the needs of users of information, but they are experiencing severe difficulties in coping with the updating of information. The net result is that the librarians, information officers, or resource personnel who are the traditional repository of documentary wisdom will have to bear the brunt of this increasing demand. It thus necessitates the establishment of effective information processing system. In light of this, it is not at all surprising to note that documentation should develop into a discipline by itself. Nor is it surprising to find that librarians are looking for more and more assistance from computer experts. After all, if computers are not panacea for ills of every resource personnel, they are at least good and reliable servants.

RECSAM, one of the contributions of Malaysian Government to regional cooperation in Southeast Asia in the area of education, is situated in Penang. Apart from its main function of preparing key personnel and educators to meet the growing requirements for scientific and technical manpower in SEAMEO member countries, RECSAM also strives to be the

- Regional catalyst and innovator for indigenous curriculum development and research
- Clearing-house for science and mathematics education for Southeast Asia
- Regional organizer and implementor of conferences, seminars, and workshops
- Resource centre for consultative, special services and cooperative ventures to countries and international agencies within and outside Southeast Asia

It is the clearing-house and resource centre functions that make the information processing an important feature at RECSAM. Publication produced at RECSAM comprise science and mathematics journals, newsletters, teaching/learning modules, self-instructional modules, workshop/seminar/conference reports, course reports and assignments, and project/

course evaluation reports. In addition to this, RECSAM receives journals, periodicals, and newsletters (many of which are on exchange basis) from other SEAMEO regional centres, international and regional institutions of higher learning, and research centres from many parts of the world.

At the moment, the resource centre at RECSAM is carrying out the normal functions of a library. Indexing and abstracting are not being done yet. There are plans to carry out this onerous job when the resource centre is fully staffed. The amount of duplicatory work involved in classifying and indexing the same document necessitates some kind of automation. Plans have already been made at RECSAM to procure microcomputers through donations from Japanese government for use in computer assisted instrctuion, word processing, information processing, storage and retrieval.

The advent of computers allows large files to be scanned quickly and randomly. This can be accomplished by keeping a computer file consisting of an entry for each class heading, descriptor or keyword used in indexing documents, followed by a list of related entries. Retrieval procedure will then enable extracts or full details of materials required to be printed or displayed on video screeen. The main difficulty lies in how best one can formulate a universal system of cataloguing with computers. It remains a challenge to librarians and computer experts alike to find ways to enable users to get their hands on the information they needed in the quickest possible time with minimum help from others. Ideally there should be some kind of an efficient, easy-to-use document analysis, storage and retrival system, with ample media for user contact, participation, interaction, and feedback. It would be even more exhilarating if conversations between user and computer be effected. With the combination of speed, accuracy, and scope of the computer, and with the expertise of trained and experienced personnel, it is envisaged that accesses to all kinds of information, educational information in particular, will become common services in this region in the not too distant future.

Annex VI

The International Bureau of Education (IBE) and its Documentation and Information Services.

The activities of the IBE in the field of educational information have a double objective. First, the development of an international network for the dissemination of educational information, second, the building up of the IBE Documentation Centre as the central data-base of a system including all national and regional centres for educational documentation and information.

Information

The IBE's information programme consists of three elements: the International Network for Educational Information (INED); the International Educational Reporting Service (IERS); and individual replies to requests from Member States, institutions and individuals.

INED

In 1977 the 36th session of the International Conference on Education established a Recommendation on "the problem of information at the national and international level which is posed by the improvement of educational systems". In this Recommendation which took the number of 71, it was stated that "Unesco, particularly through the IBE and in close collaboration with other international agencies and organizations should undertake the systematic planning, costing and development of a world-wide information network in education based on the active participation of regional and national institutions and programmes and including an assessment of the resources available and a time scale showing intermediate objectives". In 1983 together with the eighty-two countries that are already participating officially in the International Network for Educational

Information (INED), the network also includes Unesco's four regional offices for education - Africa (Dakar); the Arab State (Beirut); Asia (Bangkok); and Latin America (Santiago) - as well as several specialized institutions, such as the Unesco Institute for Education (Hamburg), the International Institute for Educational Planning (Paris), the European Centre for Higher Education (Bucharest), and the Regional Centre for Higher Education in Latin America and the Caribbean (Caracas).

The establishment of the Internaitonal Network for Educational Information depends upon the existence and the efficiency of national programmes and services. As a result, part of the IBE's work consists of helping Member States to develop and strengthen the relevant national infrastructures. This is achieved by: facilitating the exchange of information and experience; the establishment of bilateral, regional and international links; the training of students; and organizing and participating in seminars.

In this connection, the up-dating every two years of the Directory of educational documentation and information services assists in the development of contacts between various national, regional and international services, and allows users to familiarize themselves with these centres in order to be able to seek their help. Furthermore, to maintain regular contact not only between the member institutions of the network but also with other institutions working in the field of educational documentation and information, the IBE publishes the quarterly newsletter IBEDOC information.

IERS

Set up by the IBE in 1974, the International Educational Reporting Service (IERS) allows educators, planners and educational authorities in developing countries to profit more effectively from innovations in educational structures, content, methods and materials. The Unesco regional offices for education are closely associated with this programme, which also makes use of the services of consultants, groups of experts and national research institutions. IERS responds to the inquiries of Member States, institutions and individuals, commissions and publishes case studies (series "Experiments and innovations in education"); publications

are distributed free of charge to developing countries. The quarterly newsletter *Innovation,* which contains news, contributions from participants and brief studies, permits more than 11,500 specialists to maintain regular contact with each other. The *Awareness* list, also published quarterly, provides some 2,000 institutions and individuals with bibliographical abstracts on recent experiences in the field of educational innovations; this bulletin is supplementet by special series dealing with lifelong education and educational technology.

Documentation

Documentation is seen as a support to the IBE's information activities. Data are provided to educators, documentation centres, research institutes and others through updated or completely modern techniques.

Data-base and reference tools

To handle the volume of material available, the IBE, in collaboration with the computer services of the International Computing Centre, has developed data-bases termed IBEDOC and IBECENT. The English, French and Spanish keywords used for indexing, recording and retrieving data are listed in the Unesco; IBE education thesaurus.

The principal elements in the IBEDOC data-base are bibliographic data and abstracts on publications and documents. The documentation processed covers the following fields:

- New acquisions of the Documentation Centre, mainly in the field of educational organization and policy in Member States.

- Educational Innovations, educational technology and lifelong education.

- Documentation assembled for the sessions of the International Conference on Education, as well as other international and regional conferences and meetings. (The documents catalogued are also made into microfiches and sold individually or in series).

- Documentation concering educational policy included

in the Co-operative Educational Abstracting Service (CEAS).

The second data-base, IBECENT, contains data on the following institutions:

- National, regional and international centres of educational documentation and information.

- Adult education documentation and information centres.

- Research institutions.

As well as speeding up individual searches, use of the computer enables a wide range of continously up-dated reference tools to be made available to educators in different countries. Apart from those already mentioned, these tools include: the catalogues in the 'Series of international reports on education' (SIRE) and abstracts on educational policy contained in the 'Co-operative Educational Abstracting Service' (CEAS).

Terminologies and bibliographies

In order to assist research as well as to facilitate communication between specialists, the IBE also publishes multilingual glossaries of terms used in particular fields of education. The titles published so far concern special education, technical and vocational education, and adult education.

The quarterly bulletin *Educational documentation and information,* which first appeared in 1926, has since 1969 presented annotated bibliographies on such themes as the future development of education, educational research, and education of women in developing countries.

Documentation and Information Centre

The Documentation and Information Centre and International Exhibition on Education are an integral part of the IBE's documentation and information services.

The Documentation and Information Centre has a collection of about 95,000 books and documents, to which should be

added some 220,000 research reports available on microfiche in the ERIC system (Educational Resources Information Centre, United States), as well as a collection of about 1,100 journal titles. The acquisition programme is oriented towards publications concerned with educational policies and systems throughout the world. Although basically a reference service, the Centre does participate in inter-library loans. Computer-assisted documentary research services are offered and training programmes are oragnized for trainees in educational documentation. As far as possible, an effort is made to provide answers to all requests received, either from the Centre's own resources or by referral to other libraries and documentation centres. The Centre's catalogue of new acquisition is published twice a year, and there is also a list of the Centre's current holdings of periodicals. Both are largely distributed to educational institutions in Member States.

International Exhibition on Education

For many years the International Bureau of Education maintained an International Exhibition on Education, but in the mid-1970s lack of suitable space led to its temporary closure. A re-organization of the exhibition, completed in 1979, has allowed it to re-open its doors to the general public. Member States of Unesco have supplied audiovisual documents and presentations which have been put together by the Audiovisual Section of the IBE's Documentation Centre. This material (video-recordings, audiocassettes, filmstrips, slides, slide/tape presentations, films for overhead projection, etc.) present interesting aspects of national education systems, educational innovations and study programmes.

Annex VII

Information Services of the Network of Educational Innovation for Development in Africa (NEIDA)

Introduction

In 1961, when most African countries were achieving political independence, a conference of Ministers of Education in the African region observed that education in Africa was based on a non-African background. It called upon African educational authorities to "revise and reform the content of education in the areas of curricula, textbooks, and methods, so as to take account of the African environment, child development, cultural heritage and the demands of technological progress and economic development . . ." Between 1961 and 1976 a number of educational reforms were introduced and education development institutions were established at national and regional levels. At national levels, for example, curriculum development centres, teachers associations, institutes of education, and universities were established and strengthened. At the sub-regional and regional levels curriculum organizations, teachers associations, the Association of African Universities, and many other groupings were formed. These institutions and associations constitute networks within their spheres of interest and produce and disseminate information to their members. Many of them have their own libraries, publications, and information services. They also possess mailing lists and compile bibliographies. Practically all of these networks, however, worked in isolation from one another, were understaffed, and were unable to pursue completely their mandates of designing and developing educational innovations. Consequently, in 1976 a Conference of African Ministers of Education requested the Director General of Unesco to examine the possibility of establishing a Network of Educational Innovation for Development in Africa. Hence NEIDA was established.

Purpose of NEIDA

NEIDA became operational in October 1978. Its purpose is to develop national capacities for initiating and improving educational innovation for development through continuous sharing of knowledge, experience, expertise, and information among African countries. It consists of national coordinating centres, associated projects, associated regional and sub-regional networks, and a coordinating unit. Each of these organs has an information network function to perform: it collects data on an educational innovation for development, processes it in a simple fashion, and shares it with the other organs of NEIDA and with relevant groups in its constituency.

NEIDA Information Activities

Since its inception, NEIDA has placed paramount importance on the role of information and documentation in educational innovations. Its second activity after the NEIDA programme became operational was a seminar on "Information Support for Educational Innovation" held in Ouagadougou (Upper Volta) during December 4-14, 1978. The seminar was followed in 1979 and 1980 by training workshops for personnel responsible for information and documentation services at national coordinating centres, and associated regional and sub-regional institutions. In addition, as part of training, attachments to the Unesco Regional Office for Education in Africa are provided for selected personnel of the national coordinating centres. Technial support is also provided to participating countries that are just setting up their information and documentation facilities.

Focus of Information Services

To date, NEIDA focusses on six spheres of educational innovation for development; they are: education and productive work; education for development in rural areas; administration and supervision of educational systems; training and retraining of educational personnel; production and distribution of teaching materials; use of national languages in education. For purposes of informatin service each of these spheres is sub-divided into more specific items, for example "education and productive work" is sub-divided into structure, content, and methods; economic factors; social

factors; formal and non-formal education.

Methods of Information Exchange

NEIDA information services are concerned directly with the utilization of general media of communication. These media include publications by institutions at national, sub-regional, regional, and international levels; radio; television; audio- and video-tape recordings; photographs; exhibits; and films. Correspondence among members of the network also plays a very important part in information sharing and transfer.

The NEIDA Coordinating Unit plays an exemplary and catalytic role. It produces a number of publications which facilitate sharing of information, ideas, and experiences in the network. These publications are: *NEIDA Information* (a quartely liaison bulletin for network members), *Inventory of Innovations* (a serial publication summarizing reports on innovative projects associated with the network), *Innovation and Change* (a series of monographs or in-depth studies on some on-going educational experiences in the region), *NEIDA Digest* (a publication containing reprints or abstracts of articles on educational innovations outside the network). In addition, the Unit publishes a *Directory* (of National Coordinating Centres, Associated Projects, and Associated Regional Networks), an annual *Calendar* of NEIDA Activities, and *Special Reports* (usually published jointly with institutions such as the International Bureau of Education).

Audiences of NEIDA Information

NEIDA information is targetted at the following groups: the various organs of NEIDA; national bodies, institutions and organizations involved in on-going educational reforms; National Commission of Unesco in each country; regional and national branches of international and bilateral cooperating agencies; headquarters of international and bilateral co-operating agencies.

Conclusion

NEIDA's information services are still at an embryonic stage. But they have sensitized numerous people and institutions in the African region to the important role informa-

tion can play in the support of educational innovation for development. The services have also pointed a direction towards building efficient educational information services from limited resources.